CLAIMS

What is claimed is:

1. A method for dynamically inverting an Asymmetric Digital Subscriber Line (ADSL) system comprising a central exchange equipment (CE) connected to a service provider network and a user equipment (UE) connected to a user workstation, wherein said CE and said UE are interconnected by a PSTN link, said CE including an input line for transmitting high-speed data from said service provider network to said user workstation and an output line for receiving medium-speed data from said user workstation and further comprising CE coding/decoding means for coding said high-speed data and decoding said medium-speed data, said UE including an input line for transmitting medium-speed data from said user workstation to said service provider network and an output line for receiving high-speed data from said service provider network and also including UE coding/decoding means for coding said medium-speed data and decoding said high-speed data, said method comprising:

transmitting an inverting request message from said UE to said CE;

in response to said inverting request message, activating said CE coding/decoding means for coding medium-speed data on said CE input line and decoding high-speed data on said CE output line;

transmitting a first acknowledgment message from said CE to said UE informing said UE that transmission in reverse mode is authorized; and

in response to said first acknowledgment message, activating said UE coding/decoding means.

2. The method of claim 1, further comprising transmitting a second acknowledgment message from said UE to said CE informing said CE that switching into reverse mode is completed.

3. The method of claim 2, wherein said second acknowledgment message is a tone sequence that is generated by a tone generator in said UE and decoded by a tone decoder in said CE.

4. The method of claim 2, wherein said second acknowledgment message is either a control message transmitted in a high-speed control channel from said UE to said CE or said superframe itself.

5. The method of claim 2, wherein data that is received by said CE from said service provider network after transmission of said first acknowledgment message from said CE to said UE, are stored in a FIFO buffer until said second acknowledgment message is received by said CE.

6. The method of claim 5, wherein transmission in reverse mode from said CE is authorized in response to said FIFO being full prior to said second acknowledgment message being received by said CE.

7. The method of claim 1, wherein said step of transmitting an inverting request message is performed in response to a request from said user workstation to transmit high-speed data on said UE input line and to receive medium-speed data on said UE output line.

8. The method of claim 1, wherein said step of activating said UE coding/decoding means further comprises:

coding high-speed data which will be transmitted on said UE input line; and

decoding medium-speed data which will be received on said CE output line.

9. The method of claim 1, wherein said inverting request message is a tone sequence that is generated by a tone generator in said UE and decoded by a tone decoder in said CE.

10. The method of claim 1, wherein said inverting request message is a control message transmitted in a control channel multiplexed with data in a data superframe transmitted from said UE to said CE.

11. The method of claim 1, wherein said first acknowledgment message is a tone sequence that is generated by a tone generator in said CE and decoded by a tone decoder in said UE.

12. The method of claim 1, wherein said first acknowledgment message is either a control message transmitted in a control channel of a first superframe transmitted from said CE to said UE or said first superframe itself.

13. The method of claim 1, wherein data that is received from said user workstation in said UE after transmission of said inverting request message, is stored in a FIFO buffer until said first acknowledgment message is received by said UE.

14. The method of claim 13, wherein transmission in reverse mode from said UE is authorized in response to said FIFO buffer being full prior to receipt of said first acknowledgment message by said UE.

15. A system for dynamically inverting an Asymmetric Digital Subscriber Line (ADSL) system comprising a central exchange equipment (CE) connected to a service provider network and a user equipment (UE) connected to a user workstation, wherein said CE and said UE are interconnected by a PSTN link, said CE including an input line for transmitting high-speed data from said service provider network to said user workstation and an output line for receiving medium-speed data from said user workstation and further comprising CE coding/decoding means for coding said high-speed data and decoding said medium-speed data, said UE including an input line for transmitting medium-speed data from said user workstation to said service provider network and an output line for receiving high-speed data from said service provider network and also including UE coding/decoding means for coding said medium-speed data and decoding said high-speed data, said system comprising:

means for transmitting an inverting request message from said UE to said CE;

means responsive to said inverting request message, for activating said CE coding/decoding means that codes medium-speed data on said CE input line and decodes high-speed data on said CE output line;

means for transmitting a first acknowledgment message from said CE to said UE informing said UE that transmission in reverse mode is authorized; and

means responsive to said first acknowledgment message, for activating said UE coding/decoding means.

16. The system of claim 15, further comprising means for transmitting a second acknowledgment message from said UE to said CE informing said CE that switching into reverse mode is completed.

17. The system of claim 16, wherein said second acknowledgment message is a tone sequence that is generated by a tone generator in said UE and decoded by a tone decoder in said CE.

18. The system of claim 16, wherein said second acknowledgment message is either a control message transmitted in a high-speed control channel from said UE to said CE or said superframe itself.

19. The system of claim 16, wherein data that is received by said CE from said service provider network after transmission of said first acknowledgment message from said CE to said UE, are stored in a FIFO buffer until said second acknowledgment message is received by said CE.

20. The system of claim 19, wherein transmission in reverse mode from said CE is authorized in response to said FIFO being full prior to said second acknowledgment message being received by said CE.

21. The system of claim 15, further comprising:

a tone generator for generating said inverting request message as a tone sequence; and

a tone decoder for decoding said inverting request message.

22. The system of claim 15, wherein said inverting request message is a control message transmitted in a control channel multiplexed with data in a data superframe transmitted from said UE to said CE.

23. The system of claim 15, further comprising:

a tone generator for generating said first acknowledgment message as a tone sequence; and

a tone decoder for decoding said first acknowledgment message.

24. The system of claim 15, wherein said first acknowledgment message is either a control message transmitted in a control channel of a first superframe transmitted from said CE to said UE or said first superframe itself.

25. The system of claim 15, further comprising a FIFO buffer for storing data that is received from said user workstation after transmission of said inverting request message until said first acknowledgment message is received by said UE.

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